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ABSTRACT

An evaluation procedure, Cognitive Congruence Procedure (CCP), is described which systematically looks at the cognitive dimension of instruction and provides information on: (1) Congruence of intent and practice, (2) Emphasis given to each kind of thinking operation, (3) The degree to which a program has been implemented, (4) Judging equivalence of course selections and comparing different courses. Several indices are collected: (1) The instructor's objectives and test questions, classified using the Taxonomy of Intellectual Abilities, an adaptation of Bloom's Taxonomy. This provides one index of intended and actual cognitive emphasis of the course. (2) The Cognitive Activities Rating Scale (CARS), also based on Bloom's Taxonomy, lists class activities calling for each kind of thinking operation. The teacher responds to CARS in terms of "Ideal" class activities. Students respond in terms of the most characteristic course activities. Comparison reveals the congruence of intent and practice. Studies support the accuracy, validity, and reliability of each step in the procedure. A teacher can use the CCP in modifying practices, expectations, and his perception of the instructional process. It should not, however, be used to evaluate teachers since many other teaching dimensions not contained in the CCP are needed for this purpose. CCP, first used with college classes, has been modified for grades six and above in the Illinois Gifted Program Evaluation. (AUTHOR/GS)

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ASSESSING INTENT AND PRACTICE IN INSTRUCTION

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ASSESSING INTENT AND PRACTICE IN INSTRUCTION

A form of course evaluation students have used for years is the matching of an instructor's talk with his behavior. The teacher is judged by comparing his words with his actions: Is he seen as practicing what he preaches, or does his behavior violate the concepts he teaches? This judgment is made subjectively, seldom disclosed to the teacher, and based on criteria which vary from student to student.

Now an evaluation procedure has been developed[1] which provides an objective and systematic way for the teacher -- and others -- to look at the cognitive dimension of instruction in terms of intents and practices. The procedure also provides a way of comparing instructional groups in terms of cognitive emphasis.

Traditional curriculum evaluation calls for the assessment of student outcomes. However, outcome evaluation is often a highly inappropriate activity as it is presently conducted. Before attempting to determine the effects of an instructional treatment, it is important to determine if a treatment actually exists. The equivocal results of much instructional research are probably due in large part to the assumption that a treatment was fully and adequately performed. The procedure described herein provides an index of what the intents and practices of a program are and reveals the degree to which they are consistent

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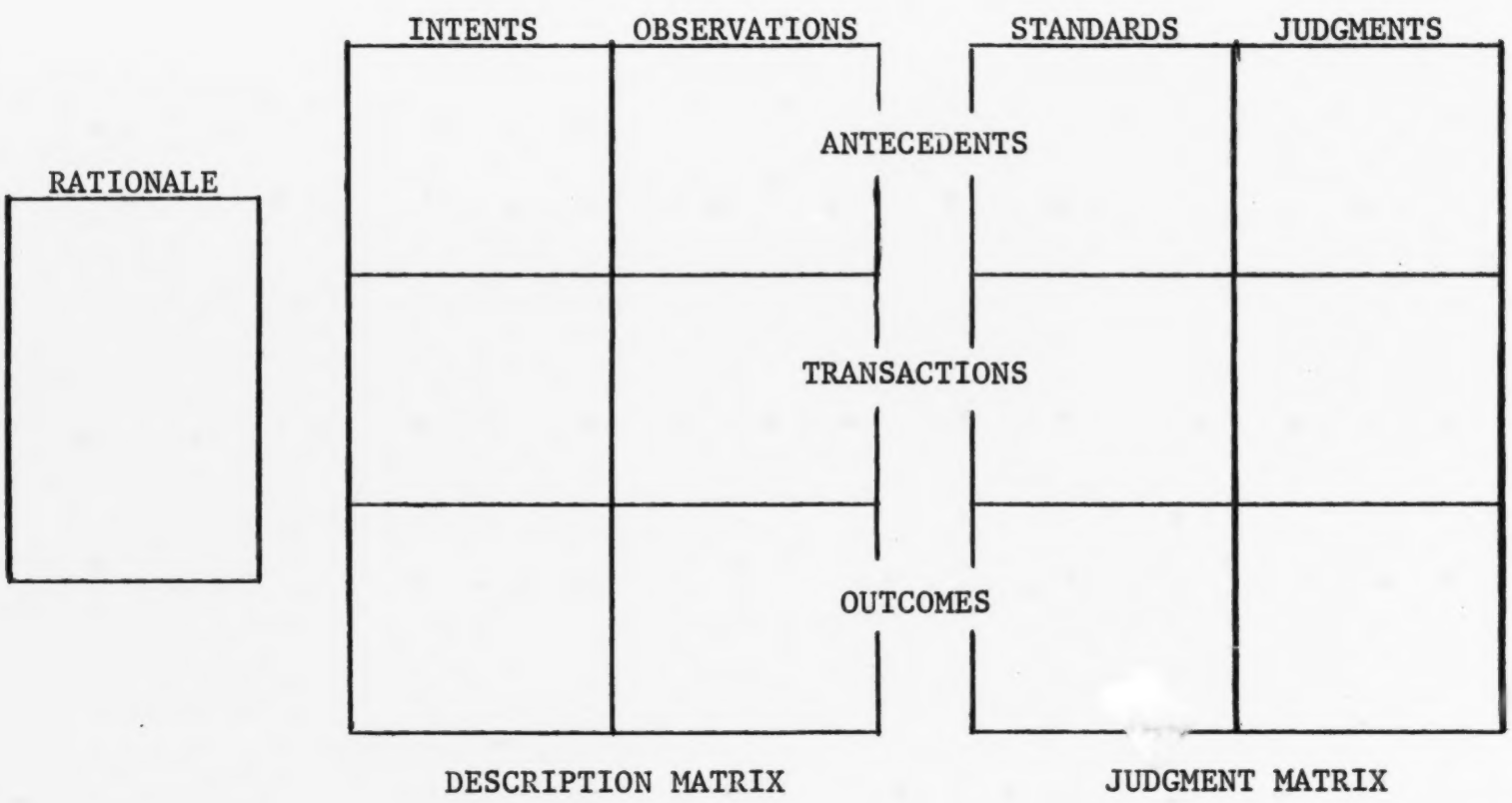
[1]Steele, Joe M. Things As They Are: An Evaluation Procedure to Assess Intent and Practice in Instruction. Unpublished doctoral dissertation, Urbana: University of Illinois, 1969.

and congruent. When it has been determined that a consistent set of intents and a matching set of practices are being applied in a course of instruction, then it is both necessary and worthwhile to engage in outcome evaluation.

This evaluation procedure (known as the CC or Cognitive Congruence Procedure) is based primarily on the theoretical frameworks for evaluation developed by Stake[2] and Scriven.[3] Their contributions have led to a major expansion and redefinition of the field. There are many dimensions of the classroom which are now seen as important to describe and consider in the total evaluation of a program.

FIGURE 1

Stake's Framework to Guide the Collection of Evaluation Information



[2]Stake, Robert E. The Countenance of Educational Evaluation, Teachers College Record, 68, 7, April 1967.

[3]Scriven, Michael. The Methodology of Evaluation, Perspectives of Curriculum Evaluation, American Educational Research Association Monograph Series on Curriculum Evaluation. Chicago: Rand McNally and Company, 1967.

Figure 1 shows Stake's model of evaluation, indicating the data to be collected in a total evaluation. This guide focuses attention on the context, the conditions surrounding the use of an instructional treatment and the transactional nature of the teaching-learning process. This model itself is not static. It is highly dependent on both time and perspective. The process of description and the comparison of intents and observations result in revisions and new descriptions of the program under evaluation. Those under evaluation will react to their own description -- clarifying intents, reassessing the situation, and striving for greater consistency and congruence.

Within Stake's framework the CC Procedure represents only a part of the total evaluation. Transactions intended and observed in the Description Matrix are the major concern of this procedure. Furthermore, within this area the procedure deals primarily with only one dimension: the cognitive domain. The CC Procedure is intended to be applied by teachers and administrators for the improvement of the instructional program in use. The intended focus of the procedure is on clarifying the program's objectives and strengthening the relationship of instructional practices to those objectives.

The CC Procedure was first developed and illustrated using six sections of a university undergraduate course. Reliability and validity studies were undertaken to support the classification system and rating instrument used in the procedure. Further studies have since been conducted to allow the procedure to be used with public school classes of grade six and above. This modification of the procedure is currently being used in the Illinois Gifted Program Evaluation. Noncognitive dimensions assessing classroom climate, student attitudes and behavior have been added.

Indices of Intent and Practice

One index of the teacher's intents in a course of instruction is simply what he says he hopes to achieve. These statements are called his goals, objectives, or expected outcomes. These can be stated in a variety of ways and vary in nature with the subject area, level of instruction and school setting. In spite of this diversity, only a limited number of student behaviors related to thinking operations are believed to exist. By classifying the stated objectives in terms of the intended cognitive behavior of students which is implied, the intended cognitive emphasis of any course of instruction can be described.[4] If the order of importance of the objectives is specified, a profile can be made which shows the balance of emphasis on thinking operations intended.

In contrast to what is intended, a teacher's tests represent one index of the kinds of activities actually practiced in the course. The teacher uses the tests as one way of determining whether the students are achieving the goals he holds important. Tests are also used to assign grades showing the student's degree of success in the course. While there may be objectives that remain untested, it seems quite likely that tests do represent the instructor's actual emphasis in the course. In a similar manner to objectives, test questions can also be classified according to the cognitive behavior required of students. By using the weights the instructor used in scoring the tests, a profile of cognitive emphasis actually practiced in the course can be determined. The degree to which the cognitive profile of practices matches the intended cognitive profile is a measure of congruence of intent and practice in instruction.

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[4] A classification system, the Taxonomy of Intellectual Abilities (TIA), based on Bloom's Taxonomy, will be described in a later section of the paper.

It should be noted that this measure is just one indicator of the instructor's emphasis. No statement of objectives or set of tests will ever be a complete description of intents and practices. For this reason it is wise to seek another index of intents and practices. Based on the Taxonomy of Intellectual Abilities (TIA) used to classify objectives and tests, the Cognitive Activities Rating Scale (CARS) lists a number of class activities. Several activities for each level of cognitive behavior the student might perform are included. To obtain a second index of the teacher's intents for the course, the teacher could be asked to note the degree to which he would emphasize the various listed activities in the specific course he is teaching. Matching this indication of the activities he hopes to emphasize in the course with the profile based on his objectives would provide a measure of consistency of intents. A close match would imply that the instructor is sure of the emphasis he wishes to give and that he holds clearly defined and stable expectations for the course.

Using the same set of class activities, the teacher's students could be asked to indicate which activities they see as most characteristic or uncharacteristic of the course in question. Their responses as a group could be used to derive a second profile of the cognitive emphasis actually practiced in the course. The teacher's Intended emphasis on the Cognitive Activities Rating Scale could be matched with the Actual emphasis (as perceived by students) to provide a second index of congruence of intent and practice in instruction. The two samples of practice could be compared to obtain another measure of consistency.[5] Figure 2 shows the data collected and compared in the CC Evaluation Procedure.

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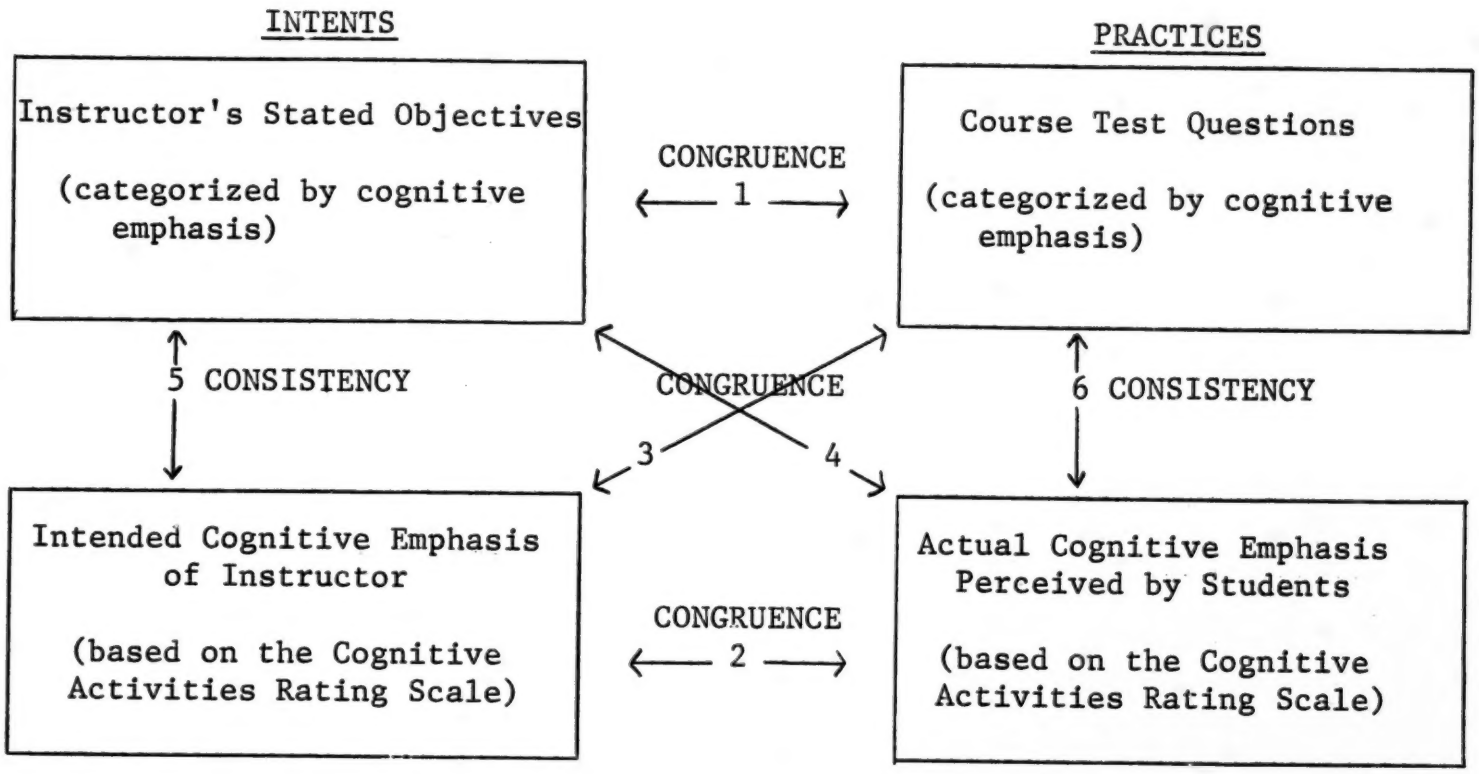
[5] If the indices of practice are inconsistent, then it would be well to inquire further into the instructor's use of tests and attempt to obtain further information on how student learning is assessed. Not all tests are the paper and pencil variety. Sometimes the student may be required to produce a particular product or perform a particular set of operations or demonstrate the acquisition of certain skills. These too are amenable to classification in terms of the implied cognitive behavior required of the students.

FIGURE 2

STEPS INVOLVED IN THE CC EVALUATION PROCEDURE



1-2 = Direct comparisons to assess congruence of intent and practice
3-4 = Indirect comparisons to assess congruence of intent and practice
5-6 = Comparisons reflecting consistency between the two measures of intent or practice

Taxonomy of Intellectual Abilities

Classification of objectives and tests in terms of the intended cognitive behavior of students vastly simplifies the analysis of instructional programs. It also enables direct comparisons across many grade levels, subject areas, and diverse school settings.

The Taxonomy of Intellectual Abilities, shown in Figure 3, is the classification system used. The Taxonomy of Intellectual Abilities is based on Bloom's Taxonomy of Educational Objectives: Cognitive Domain. The latter was first published in 1956 and a number of research studies have shown it to be a useful and effective tool.

The Taxonomy of Intellectual Abilities, like Bloom's Taxonomy, is hierarchical in structure. This means that mental operations are ordered according

FIGURE 3
TAXONOMY OF INTELLECTUAL ABILITIES
(Adapted from Bloom's Taxonomy by Joe M. Steele)

I. MEMORY

Recall, recognition, bringing to mind of any kind of information. Some alteration of the material may be required, but this is a minor part of the task. Memory involves the ability to reproduce or recognize information as it was presented.

II. TRANSLATION

Changing information into a different symbolic form to express the same idea, such as the use of paraphrasing, pictures, graphs, summaries, outlines, or statements in technical or layman's language. It also includes the use of metaphor, symbolism, and other non-literal statements. Translation involves the ability to comprehend information, including recasting or altering it in various ways.

III. INTERPRETATION/EXTRAPOLATION

Discovering and exploring the interrelationships among ideas (on a common-sense level). Comparing, contrasting, and explaining information based on the new view the perceived relationships provide. The task may require going beyond the given data in making inferences, predicting trends, and determining implications and consequences. Interpretation involves the ability to extend and manipulate information to clarify relationships suggested by the data or to project trends based on patterns apparent in the data.

IV. APPLICATION

Utilizing abstractions (generalizations, rules, skills) in concrete situations. Selecting and applying rules or methods to solve a specific problem, usually with a minimum of direction or prompting as to which abstractions apply or how to use them. This kind of task gives practice in the independent use of knowledge and skills, requiring the identification of the issue as well as selection and use of the correct abstractions to solve problems in practical settings. Application involves the ability to select the methods or generalizations called for by specific problem situations and perform the operations required to solve the problem.

V. SYNTHESIS

Recombining parts of previous experience with new material into a new integrated whole, pattern, or structure not clearly there before. Synthesis implies a new product requiring original, creative thinking. This can take the form of a unique communication involving skill in writing or speaking; a proposed set of operations, such as ways of testing hypotheses, or developing an effective plan to solve a complex problem; or the derivation of abstract relations, as in making generalizations or mathematical discoveries. Synthesis involves the ability to generate new ideas and solutions: inventing, designing, composing, creating.

VI. EVALUATION

Clarifying and using a standard of appraisal in making judgments about the value of materials or methods for given purposes. In making judgments of good or bad, right or wrong, the standards or criteria used should be made explicit. This category forms a major link with the affective domain where values, liking, and enjoying are central processes. Evaluation is always somewhat subjective because either the standard cannot be proven to be correct or the idea to be judged cannot be proven to violate or illustrate the standard. Evaluation involves the ability to develop and apply a set of standards for judging worth, and to support the judgments with a justification or rationale based on the criteria used.

VII. FORMAL ANALYSIS

Conducting a searching inquiry into the true nature of interrelationships and testing the validity of arguments according to appropriate rules of reasoning, with conscious knowledge of the intellectual processes being performed. Analysis includes the ability to recognize unstated assumptions, distinguish facts from hypotheses and normative statements, recognize conclusions and purposes of the material, and check consistency and relationships. Formal Analysis involves the ability to consciously apply appropriate rules of reasoning in testing the validity of statements, arguments, and conclusions.

to difficulty; each higher level of thinking requiring and including the lower thinking operations. The Taxonomy of Intellectual Abilities is composed of seven categories. The first three (Memory, Translation, Interpretation) are lower cognitive processes which lie in the general category Bloom calls Comprehension. They represent the lowest level of understanding. Levels four through seven on the Taxonomy of Intellectual Abilities (Application, Synthesis, Evaluation, Formal Analysis) are higher cognitive processes. They are concerned with the use or development of intellectual skills and abilities.

Bloom's Taxonomy has primarily been used as a research instrument by trained observers. The intent of the Taxonomy of Intellectual Abilities adaptation was to develop a classification system for use by untrained teachers and administrators. The description of each of the categories was repeatedly field tested and revised to lessen confusion between categories and produce appropriate interpretations of each thinking operation.

A set of directions was developed which established conventions for dealing with ambiguous items or those which seemed to fit in more than one category. In addition, a sample set of objectives and questions was developed. This set of items serves both to illustrate the use of the Taxonomy of Intellectual Abilities and as a practice set for rudimentary training in the use of the system. (See Appendix.)

A reliability and validity study was conducted which demonstrated that the Taxonomy of Intellectual Abilities could be used reliably and with precision by untrained teachers and administrators.[6] It was also shown that items were

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[6]A majority of the raters agreed on the classification of three-fourths of the practice items and about two-thirds of the real objectives and test items classified. A clear-cut assignment to a specific category was determined for 79% to 89% of the items. When compared to the agreement among teachers in the grading of papers and similar tasks of this difficult nature, the degree of agreement is seen to be relatively high. This result compares favorably with the study conducted by Julian Stanley (1957) using raters who received four weeks training in the use of Bloom's Taxonomy.

consistently associated with particular categories regardless of the rating characteristics of particular judges.

Figure 4 illustrates the profiles of cognitive emphasis which result when an instructor's objectives and tests are classified in terms of the Taxonomy of Intellectual Abilities. Instructor A intended to emphasize each cognitive level to some degree, but sought to place about three-fourths of the emphasis on higher level thought processes. In his tests, 87% of the emphasis was placed on these levels and he did succeed in emphasizing six of the seven levels to some degree.

Instructor B intended to emphasize four of the seven levels with slightly more than half of the emphasis placed on lower level thought processes. His tests emphasized only the lower cognitive levels with the lowest level (Memory) receiving over three-fourths of the emphasis.

The Cognitive Activities Rating Scale

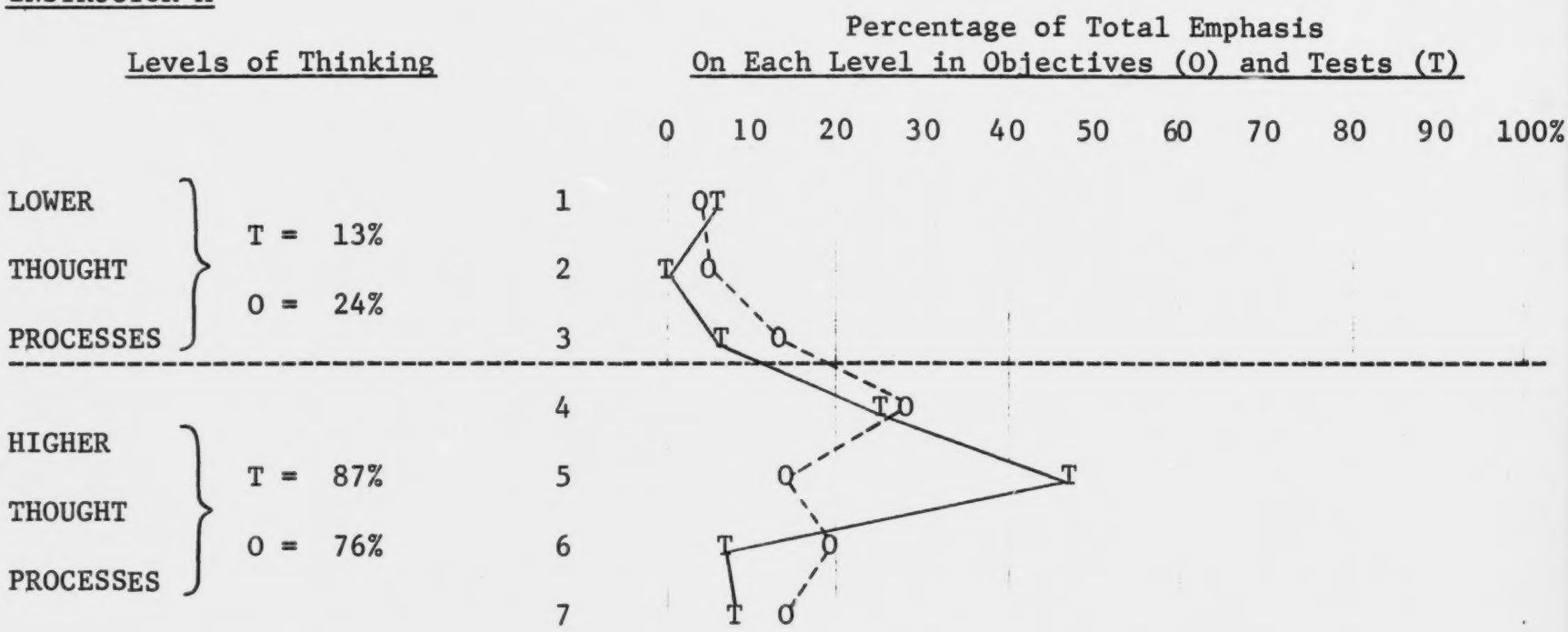
The Cognitive Activities Rating Scale was developed to provide a more direct measure of the emphasis given to various cognitive activities than is provided by classifying objectives and test questions. This thirteen item forced-choice instrument is composed of short statements describing cognitive activities. Responses are made in terms of Strongly Agree, Agree, Disagree, or Strongly Disagree. Each response is made in terms of the degree to which the item is characteristic of the specific course of instruction involved. (See Figure 5.)

The Cognitive Activities Rating Scale provides three profiles for each class, as well as scores useful for comparing classes. When administered to all students in a class, the mean and distribution of response indicates the instructor's actual practices insofar as they are perceived by the students as a group. When administered to instructors, each is asked to mark the responses

FIGURE 4

PROFILES OF COGNITIVE EMPHASIS IN OBJECTIVES & TESTS

(Actual Patterns for Two College Instructors)



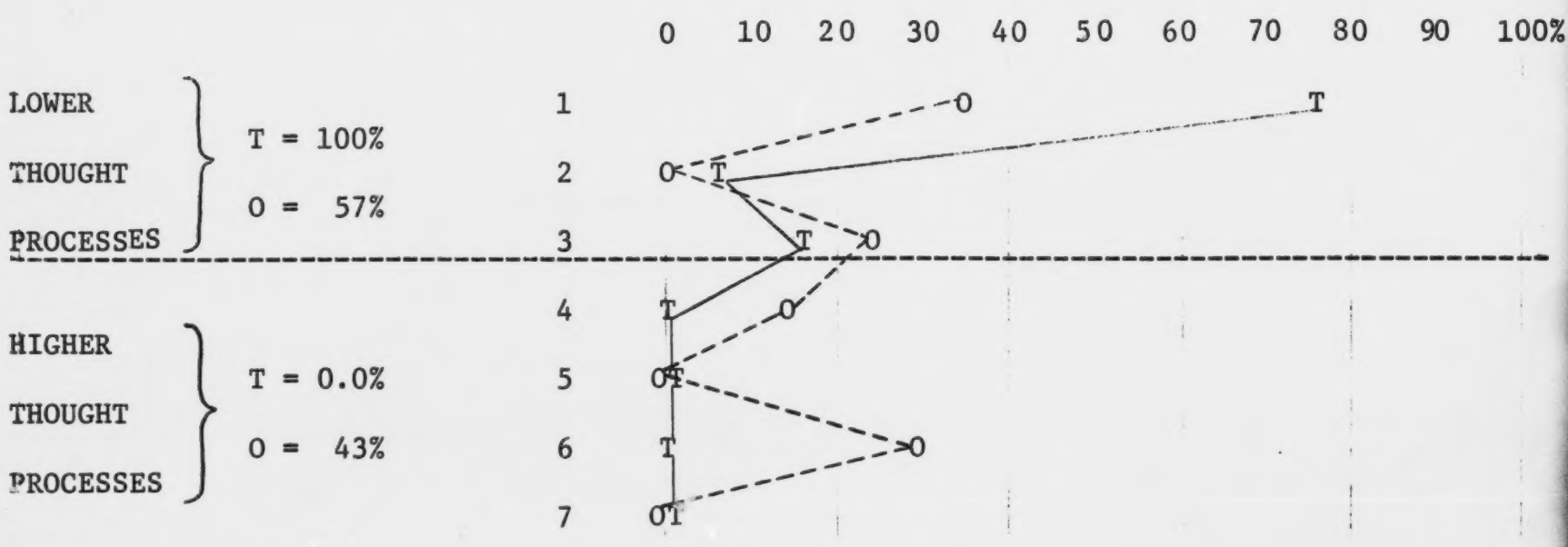


FIGURE 5

COGNITIVE ACTIVITIES RATING SCALE (CARS)

The following statements concern characteristics your course may have exhibited. For each statement circle the letters which show the extent to which you agree or disagree.

Base your answer on how well each sentence describes what is stressed in your class.

RESPONSE CODE:		
Circle	SA	If you Strongly Agree with the item
Circle	A	If you Agree moderately with the item
Circle	D	If you Disagree moderately with the item
Circle	SD	If you Strongly Disagree with the item

1.	The course chiefly emphasizes knowledge of facts.	SA	A	D	SD
2.	Evaluation of issues and ideas is a central purpose of the course.	SA	A	D	SD
3.	Methods are tried out in problem situations.	SA	A	D	SD
4.	Going beyond the information given to see implications is a central concern.	SA	A	D	SD
5.	Emphasis is on logical reasoning and analysis.	SA	A	D	SD
6.	Restating ideas in your own words is stressed.	SA	A	D	SD
7.	Great emphasis is placed on memorizing.	SA	A	D	SD
8.	Problem-solving requiring original, creative thinking is stressed.	SA	A	D	SD
9.	The purpose of the course is to develop skill in using methods and ideas.	SA	A	D	SD
10.	Emphasis is placed on making inferences, deductions and interpretations.	SA	A	D	SD
11.	Critical analysis of studies is stressed.	SA	A	D	SD
12.	A major purpose is to develop a standard for making judgments of value.	SA	A	D	SD
13.	Emphasis is on synthesizing information to develop new solutions and insights.	SA	A	D	SD

CARS 9-11
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he would ideally like his class to give him. This measure is interpreted as an index of the instructor's intended pattern of cognitive emphasis. Another score is also obtained from the instructor. He is asked to indicate the responses which he expects his class as a group will actually make. This is called the instructor's Predicted Response and is an indicator of the instructor's rapport and awareness of the way his presentation is being "received" by students. The Predicted Response also provides an unobtrusive measure of the emphasis the instructor feels he is actually giving to various activities.[7]

The activities in the Cognitive Activities Rating Scale are keyed to the seven levels of the Taxonomy of Intellectual Abilities. In developing the scales a number of descriptions were generated and field tested by asking judges to classify them using the taxonomy. The final set of statements could be consistently classified at the appropriate cognitive level by persons with differing educational backgrounds.

For six of the seven taxonomic levels, statements which express roughly the same concept were paired.[8] By matching responses of the same individual to pairs of statements, the consistency of response can be ascertained. In scoring, two-thirds of the students in a class must show a consistent response to a pair for the level associated with that pair to be scored. The convention was adopted that for paired items with consistent responses, a clear-cut direction of response required fifty percent or more of the class to agree or disagree with both statements. Finally, the degree of emphasis is based on the mean response to the pair of statements.

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[7]One would expect the Predicted Response to fall somewhere between the Intended and Actual emphasis. The instructor should know the weaknesses in his presentation and the areas not clearly understood or misperceived by students. If his prediction lies farther from the students' response than his Intents, this suggests that his awareness and perception of the situation is faulty. Feedback of such information to the teacher would allow a healthy correction in his view of his students.

[8]For level II only one statement was retained in the final form of the instrument. At the time of administration field tests had failed to identify a second item which was associated more closely with level II than other levels.

The reason for these scoring rules is this: the lack of consistency of response would tend to indicate that those activities were either not clearly in evidence or that students were not certain of their opinions. Given consistent responses, the direction of response is a function of the proportion of the group involved and the intensity of their response, and both should be large enough to be judged representative of the group as a whole.

Figure 6 illustrates the profiles of intended and practiced cognitive emphasis provided by the Cognitive Activities Rating Scale. This instrument in itself provides much information meaningful to the teacher.[9] Instructor A is seen by students as emphasizing six of the seven cognitive levels, with much emphasis given to five of them. All of the higher levels are emphasized. For five of the levels the instructor's intended emphasis is realized even in respect to the degree of emphasis intended. One lower level process was strongly emphasized although the instructor wanted it to receive no emphasis.

Students in Instructor B's class perceived an emphasis on only one cognitive level, the highest level. However, they did strongly agree that activities representing three other levels were <u>not</u> characteristic of their class, although the instructor had intended to emphasize those three levels. He was seen as emphasizing only one of the six levels he intended to stress.

The Cognitive Activities Rating Scale has been found to clearly discriminate among classes in terms of students' perception of cognitive emphasis of presentation. Obtained reliability coefficients are at acceptable levels. Analysis of the cognitive factors show them to be receiving consistent responses to

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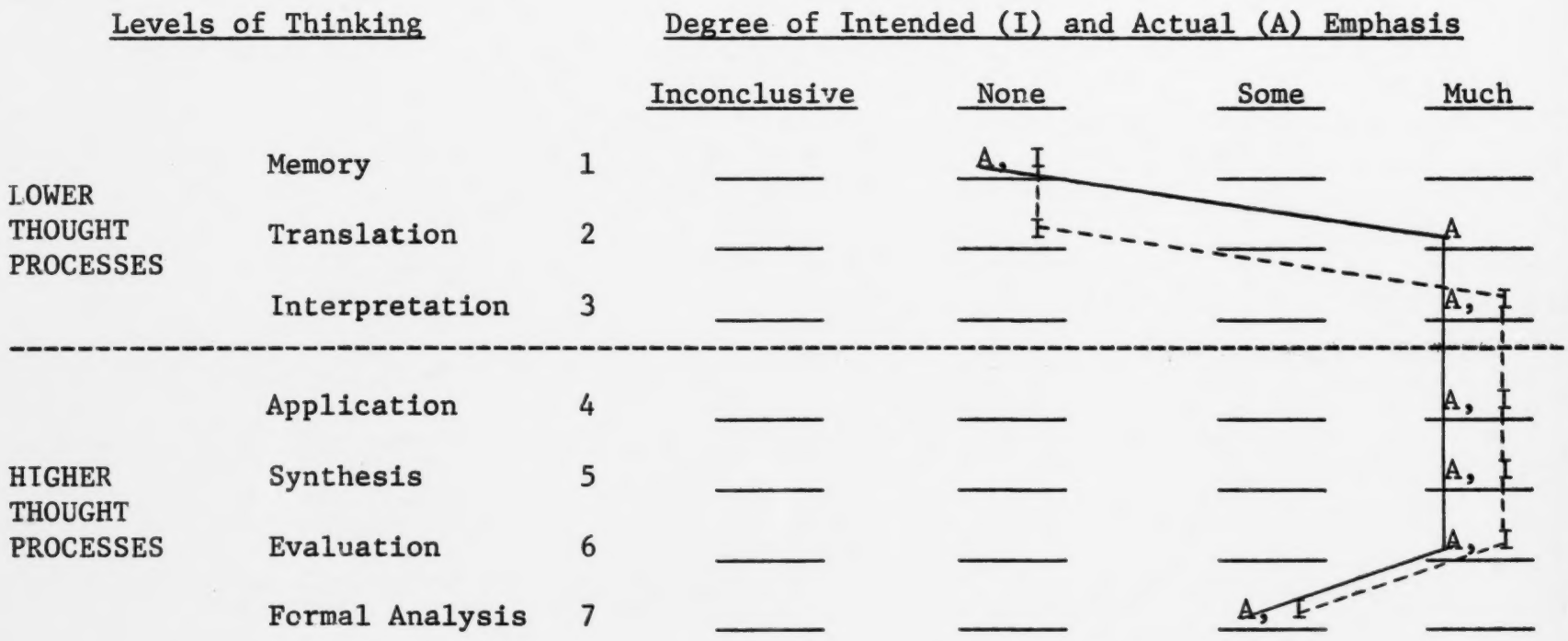
[9]For an expanded version of this instrument which includes noncognitive dimensions, see Joe M. Steele, <u>Dimensions of the Class Activities Questionnaire</u>, Illinois Gifted Program Evaluation, Center for Instructional Research and Curriculum Evaluation, University of Illinois, Urbana, Illinois, Oct. 1969.

FIGURE 6

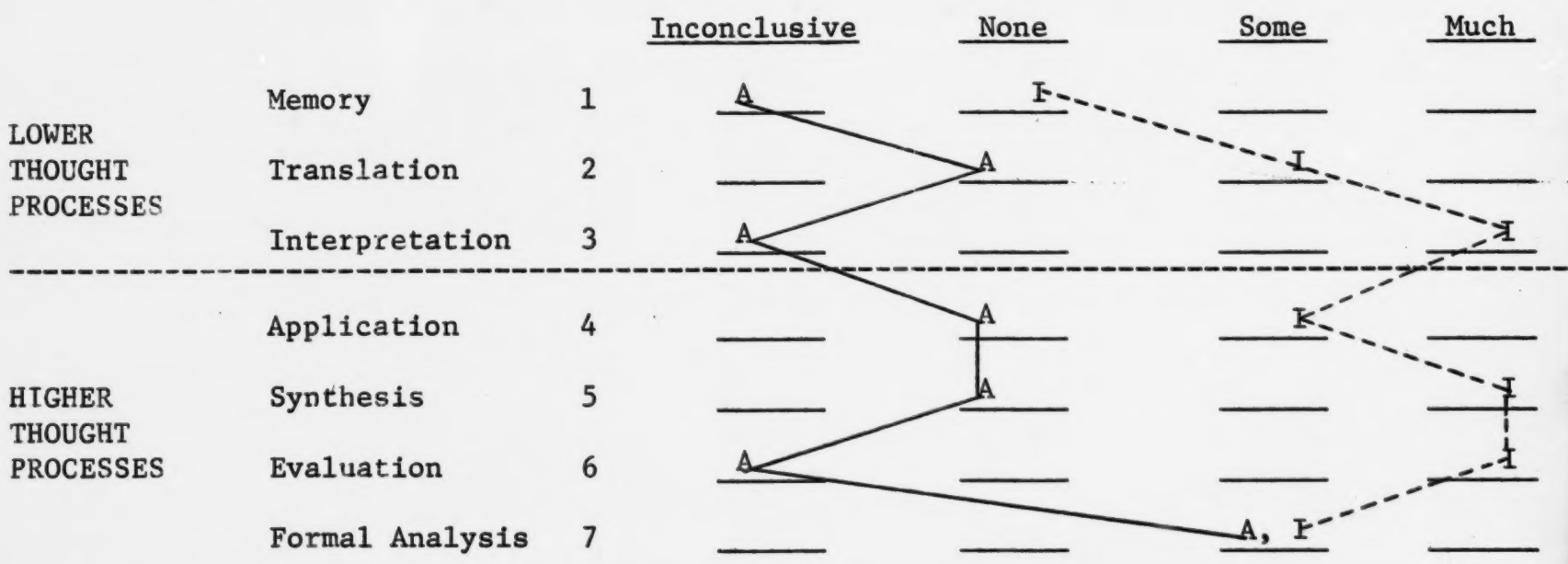
PROFILES OF EMPHASIS ON THE COGNITIVE ACTIVITIES RATING SCALE

(Actual Patterns for Two College Instructors)

INSTRUCTOR A



INSTRUCTOR B



paired items and to be interpreted in the expected way. Three of the seven levels (4, 6, and 7) are somewhat less clearly defined than the other four, but factors for all cognitive levels are judged to supply meaningful information.

Congruence/Consistency Matrices

A method of summarizing the comparisons of intents and practices is used in the CC Evaluation Procedure which compares four assessments of congruence and two assessments of consistency per instructor or classroom group. Figure 7 illustrates the relationships represented in this Congruence/Consistency Matrix. Judgments of congruence or incongruence are based primarily on a dichotomy of the Taxonomy of Intellectual Abilities into higher and lower cognitive levels. Decision rules have been carefully defined for making these judgments. This method of comparison is more lenient than one demanding a strict match across all seven levels of the Taxonomy of Intellectual Abilities. Thus the behavior of an instructor who approximates his intents would be judged congruent.

Figures 5 and 6 have shown the major congruency comparisons of the two indices of intent and practice for two actual cases. The cases were two sections of the same undergraduate course. These are represented by the diagonal circled in Figure 7. It should already be obvious that Instructor A demonstrates a close match between intent and practice. Many contradictions between intent and practice as well as inconsistency in what is intended are revealed in Instructor B's class. What becomes apparent in the matrix, however, is that this teacher's intents as expressed in the Cognitive Activities Rating Scale do not match any of the other measures. Further than this, the instructor's test questions assess the cognitive intents expressed in neither his objectives nor the Cognitive Activities Rating Scale. Close examination of the degree of

FIGURE 7

ILLUSTRATIONS OF RELATIONSHIPS IN A CONGRUENCE/CONSISTENCY MATRIX

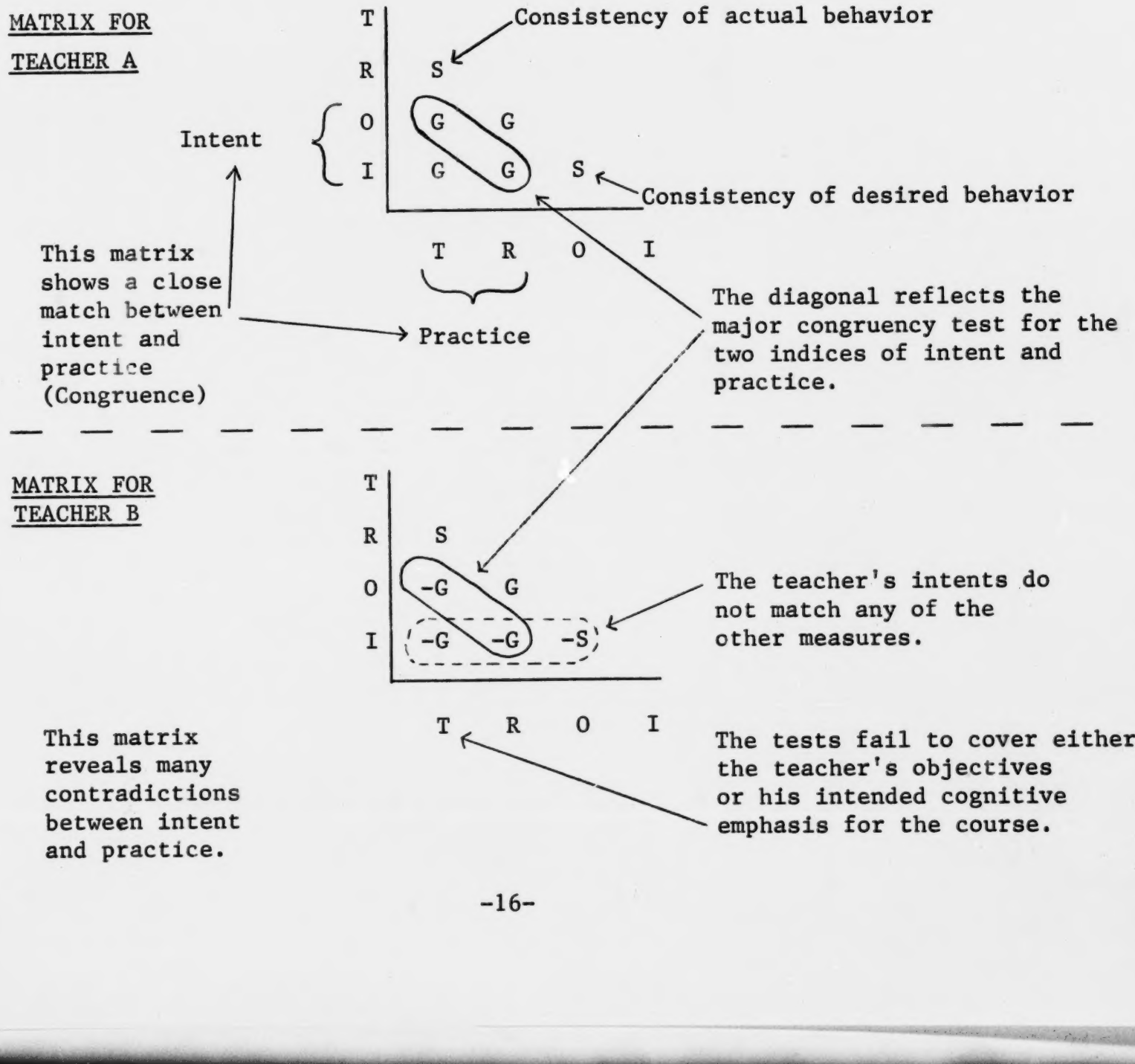
(Actual Patterns for Two College Instructors)

Key: T = Instructor's tests
R = Students' perception of instructor's practices
O = Instructor's stated objectives
I = Instructor's intended cognitive emphasis for the course

T, R — Measures of instructor's practices

O, I — Measures of instructor's intent

S = ConSistency -S = InconSistent
G = ConGruence -G = InconGruent



match between objectives (O) and the students' perception (R) reveals that little of what the instructor intended is seen as practiced. (The comparison is shown as congruent in the matrix because no clear contradictions exist although some are suggested.)

The instructional treatment in case B remains quite ambiguous. Further clarification and refinement of this instructor's class seems in order. More than this, as both classes represented the same course, the level of development of the instructional program represented by the course is called into question. No evaluation in terms of student outcomes seems appropriate until this program is made more cohesive and implemented more fully.

Discussion

The application of the CC Procedure makes use of a resource readily available but seldom utilized by teachers: the perceptions of students. It requires the teacher to commit himself to an explicit set of priorities against which to view the goals and practices of the course. The findings (and the process of description involved) can be readily used by the teacher in modifying practices, expectations, and his own perception of the instructional process. The procedure used as a formative evaluation process involving continued feedback and reaction should result in an instructional program which is highly congruent -- one in which practice approximates intent. As the teacher clarifies his goals and makes judgments concerning the value and emphasis to assign to them, it is hoped that other kinds of evaluation will also be occurring. These related assessments should ask questions such as:

"How worthwhile are these objectives?"

"How well does the student achieve the goals of the course?"

"What are other outcomes of the course on students and others?"

"How does this course compare with similar ones?"

The CC Procedure informs of the existence and implementation of an instructional treatment. It provides the individual instructor with feedback on his classroom behavior and the perceptions of his students. In addition, the procedure may serve the following functions:

1. An administrator can study the overall pattern of emphasis that characterizes a multi-section course, a department, or school.

2. The procedure provides a dimension which renders comparable classes of differing levels and subject areas.

3. The application of the procedure and reporting of results can serve as a basis for faculty dialogue, in-service training, or program development. Teachers can a) become exposed to the range of instructional treatments in use; b) deal with some of the standards and value judgments which underlie instruction; c) attempt to modify the patterns of emphasis being practiced.

There are also applications of the procedure which seem highly inappropriate. This procedure should not be used to evaluate teachers. When considered in terms of teacher effectiveness, inconsistency and incongruence are not necessarily evidence of poor instruction. Contradictions which are exposed may reflect attempts to adjust practices or revise expectations. There are many dimensions of teaching not contained in the CC procedure which should enter into a judgment of the teacher. In addition, teachers should not be required to conform to a certain pattern of emphasis. Studies regarding the effectiveness of various patterns of emphasis remain to be conducted.

Although its use to judge teachers is inappropriate, the procedure does suggest implications for effective teaching. A number of studies have revealed an imbalance in cognitive emphasis in which higher level processes are slighted and the lowest levels receive heavy emphasis. (Wood[10], Scannell and

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[10]Wood, Jean Marie. A Survey of Objectives for Teacher Education. Prepared for the Commission on Teacher Education, Association for Supervision and Curriculum Development. San Bernadino, California: San Bernadino City School System, 1960.

Stellwagen[11], Lawrence[12], Gallagher[13]) Some studies suggest that emphasizing higher thought processes results in higher student achievement. (Hunkins[14]) A common fallacy of teachers at all levels from elementary to college is the belief that lower cognitive abilities should be emphasized in introductory classes and classes of lower ability. (Torrance[15], Pfeiffer[16])

Deshpande and Webb[17] in their studies of the relationship between teaching effectiveness and various aspects of instructor teaching goals, find that ineffective instructors give considerably greater importance to the goal of teaching facts than do effective instructors, who give highest importance to higher cognitive skills. (While it is probably not desirable to always emphasize the highest cognitive level, what does seem appropriate is that a balance of emphasis is achieved over many levels.) Another finding in the Deshpande

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[11]Scannell, Dale P. and Walter R. Stellwagen. Teaching and Testing for Degrees of Understanding. California Journal of Instructional Improvement, 3, 1, 1960.

[12]Lawrence, Gordon D. Analysis of Teacher-made Tests in Social Studies According to the Taxonomy of Educational Objectives. Unpublished paper in the Clarmontiana Collection. Claremont, California: Honnold Library of the Claremont Colleges, 1963.

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and Webb studies is that there is greater teacher-student agreement on the emphasis given to goals for effective instructors.

The CC Procedure could be utilized in research to further explore the relationship between patterns of emphasis and student achievement or congruence and effective teaching.

APPENDIX

Classification of Objectives and Questions in

Terms of the Taxonomy of Intellectual Abilities

Instructions for Judges

Assign each item to one of the seven categories shown on the Taxonomy. You are to consider each item in terms of the ability the student uses to perform the task. Ask yourself, "What is the student asked to do?" If you are in doubt and feel that an item could be placed in more than one category, use the category with the higher Roman numeral. There is no set number of items per category and some categories may remain empty; however, each item must be placed in a category. Follow the steps outlined below:

1. Read the category descriptions carefully -- avoid applying your own definitions to the names of the categories.

2. Read the notes on the form of goal statements and the classification of test questions for special decision rules.

3. Now classify the Practice Objectives, items 1 - 20, considering each item in terms of the response the student must make.

4. After assigning each item in the Practice Objectives to a category, check your accuracy and understanding by looking at the correct category numbers shown after item 20.

5. Attempt to determine the rationale for assignment of any items you may have misassigned. It is important that you apply the same interpretation as that indicated by the answer key.

6. Next, classify the Practice Questions, items 21 - 40. Consider each question in the context of a college survey course on exceptional children. Ask yourself what cognitive ability the student must use to perform the task. In cases of doubt about what preparation there might have been for a question, classify the item in the highest category that seems to apply.

7. Again check your understanding and accuracy by looking at the correct category assignments shown after item 40.

8. Review the seven category descriptions before you begin classifying actual objectives and questions.

Notes on the Form of Goal Statements

Goals are frequently stated in the form of predicates or phrases lacking subjects and sometimes lacking verbs. In many cases, however, a referent is implied by the structure of the statement.

For example, objectives beginning "Familiarity with," "Be aware of," and "Know some of" seem to have the student as a referent. The antecedent "The student should (have)" seems to be implied. In such cases the verb will often indicate a cognitive activity.

A second form of goal statement seems to refer to what the instructor must do in a course. Examples of this form might begin with "Instill a desire" and "Encouragement of." Statements of this type are often concerned with the student's attitudes, feelings, and value systems. If they seem to call for the student to arrive at a decision or judgment after considering the facts, then the convention has been adopted to classify the statement in Level VI, Evaluation. Note that the major emphasis of an objective may be in the Affective rather than the Cognitive domain. As the procedure calls for all objectives to be assigned to a cognitive category, the level judged most apt is Evaluation.

Sometimes the goal statement will call for the student to "try out" activities or "develop skill (in using)" methods or ideas. Here the objective refers to actual performance and motor skills in the Behavioral domain. The convention followed is to classify behavioral objectives in Level IV, Application.

Occasionally an objective will call for the student to simply be exposed to an experience. Such statements often begin "Exposure to," "Experience (with)," "Observe." Such Experiential objectives are also classified in Level IV, Application.

Finally, goal statements frequently seem to imply the antecedent "Course content (includes)...." Examples of statements of this kind are "Characteristics of exceptional children" and "Conflicts in Special Education." Objectives commencing "To provide" also suggest a listing of content dimensions -- the facts, concepts, or activities to be included in a course -- rather than how the student is expected to deal with this content.

If nothing at all is implied concerning the operations the student is asked to do, the assumption is made that "the student should have knowledge of ..." and the appropriate classification in Level I, Memory. If any hint is given of the ability the student is called on to use, the statement is classified in the highest level that seems to apply.

Often times an educator assumes that an objective has been stated when only a topic has been listed. For example, "Conflicts in Special Education" says nothing about what the student is expected to do. In the absence of clarification, this can only be categorized as an objective stated in terms of content with the apparent implication that "the student should have knowledge of "such conflicts." This would be classified as requiring the lowest cognitive level: Memory. Indeed, the instructor may not have intended any more than that "the teacher should present" conflicts within Special Education.

This weakens the objective to the point where the goal seems to be simply exposure. This topic could be developed into a number of objectives, such as:

a. The student is able to list three conflicts in the field of Special Education. (Level I, Memory)

b. The student is able to state in his own works opposing viewpoints regarding several conflicts in Special Education (Level II, Translation)

c. The student contrasts information presented to discover conflicts in Special Education. (Level III, Interpretation)

d. The student can identify conflicts in Special Education and is able to develop a plan for resolving one of these conflicts. (Level V, Synthesis)

e. The student can cite conflicts in Special Education and state his own position regarding these conflicts, clearly stating the criteria on which he makes his judgment. (Level VI, Evaluation)

f. The student is able to analyze the arguments and opposing points of view regarding one of the conflicts in Special Education and explore assumptions and conclusions in terms of their logical consistency. (Level VII, Formal Analysis)

In many cases the instructor will have made no conscious attempt to conceptualize what he is doing in terms of the implications for student outcomes. It can be taken as a general rule that a specific objective for a particular course will generally be stated in a form which reflects its refinement and degree of clarification. The instructor may require time and opportunity for discussion to develop his statement of objectives to a level which he finds satisfactory.

Notes on Classifying Test Questions

Classifying questions is a somewhat different operation than classifying objectives -- for several reasons. First, some questions are not simply of one kind but part of several categories. As Norris Sanders[18] points out, however, difficulty of classification is no detraction from the quality of the question.

Second, the form of the question tends to lead to certain kinds of thinking. Thus, many true-false questions can only be memory questions calling for the student to recall whatever answer the teacher endorsed.

Third, the classification of a question depends in part on the amount of information that has been presented by the teacher or is a part of the student's background. The question may appear to call for evaluation by the student, but if the instructor has already indicated the judgment he prefers, the operation may be merely recall.

The person who classifies the objectives and questions will usually be aware of their context. He will know if the course is introductory or advanced,

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[18]Sanders, Norris M. Classroom Questions: What Kinds? New York: Harper & Row, 1966.

whether the test is the first or the final one and what has appeared on other tests, and probably will know something about the organization of the subject matter. Based on this context, questions must be classified in terms of the level of thinking they seem to suggest, apart from what the instructor intends or the nature of the student's response. It should be noted that such an approach may provide an overestimate of the cognitive levels emphasized. This is consistent with the convention to always resolve a classification problem in favor of the higher category involved.

Practice Objectives

1. The course chiefly emphasizes knowledge of facts.

2. Evaluation of issues and ideas is a central purpose of the course.

3. Methods are tried out in problem situations.

4. Tests are based primarily on lectures.

5. The course emphasizes a detailed study of the underlying factors contributing to the educational problems of children.

6. Going beyond the information given to see implications is a central concern.

7. Emphasis is on logical reasoning and analysis.

8. Students are expected to independently explore and initiate activities in the course.

9. Restating ideas in your own words is stressed.

10. Great emphasis is placed on memorizing.

11. Problem-solving requiring original, creative thinking is stressed.

12. Chief emphasis is on explanation and summarization of information.

13. The purpose of the course is to develop skill in using methods and ideas.

14. Students are expected to comprehend the content and be able to state it in various ways.

15. The course utilizes life-like settings for identifying and solving problems faced by the child.

16. Emphasis is placed on inferring, deducing, and interpreting.

17. Students are encouraged to discover and develop many possible solutions to problems.

18. Critical analysis of studies is stressed.

19. A major purpose is to develop a standard for making judgments of value, and applying it.

20. Emphasis is on synthesizing information to develop new solutions and insights.

Practice Objectives Key:

1.	I	5.	VII	9.	II	13.	IV	17.	VI
2.	VI	6.	III	10.	I	14.	II	18.	VII
3.	IV	7.	VII	11.	V	15.	IV	19.	VI
4.	II	8.	V	12.	III	16.	III	20.	V

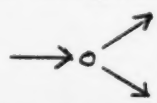
Practice Questions

21. Compare and contrast the following terms and ideas: a) Gifted - Creative
b) a handicap - a disability

22. Nominate the person(s) you feel have made a significant contribution to the fields of (a) the Gifted and (b) the Emotionally Disturbed in the past two decades. Substantiate your choices.

23. Disorders of voice are characterized by three main types:
    a) pitch, hoarseness, duration
    b) quality, intensity, pitch
    c) monotone, nasality, pitch
    d) gutteral, quality, breathiness

24. Convergent thinking might best be diagrammed as:

a) b) c)  d)

25. In evaluating screening techniques for the gifted, the term "effectiveness" is defined as the ratio of gifted correctly identified to the total number of actually gifted in the group. Restate this concept in your own words or illustrate it in a formula, diagram, or chart.

26. T-F The field of Learning Disabilities is not really a field of special education. State your rationale for your answer.

27. A retarded boy whose chronological age is 8 years-4 months, has a mental age of 5 years-10 months as measured by the Stanford-Binet Intelligence Scale. Using the formula IQ = MA/CA x 100, state the boy's intelligence quotient.

28. An experimental group test to discover underachieving gifted children has been developed. The largest sample tested to date produced these results:

No.Tested	No.Ident. as Underach.Gifted	Correctly Ident.	Overlooked
10,150	120	30	60

The test's effectiveness is: a) 25% b) 60% c) 30% d) 33% e) 90%

29. You have been given $100,000 to develop a test of creativity to be used in the schools. Explain in some detail how you would approach the problem, how you would benefit from the mistakes of others, and describe in general terms what you would expect your instruments to look like when you were finished.

30. Define etiology.

31. List all the criticisms you can that can be leveled at the following research:

"Five physically handicapped children, see in LU's research hospital out-patient clinic, were given one gram daily of a new type of 'muscular control' drug, for a period of 100 to 150 days. The results were excellent in every case: mothers reported the children were able to do more things and they 'seemed much brighter.' This was confirmed by psychological testing:

CA Range	Ave. CA	WISC IQ Before Drug	WISC IQ After Drug
3-2 to 9-9	5.0	87.12	99.99

IQ Change	Sig. Level
12.87	.01

Conclusion: We therefore recommend that this drug be used extensively with physically handicapped children."

32. T-F According to Quay, a personality disorder among the emotionally maladjusted is characterized by aggressiveness, lying, and defiance of authority.

33. What evidence can you cite from your reading and class discussion to support or refute the following generalization: "There is a direct relationship between social class and emotional disturbance."

34. How would you go about testing the following hypothesis: Hard-of-hearing children are as defective in auditory decoding as are partially seeing children in visual decoding? Start from scratch--you have no standardized tests for auditory or visual decoding processes.

35. Discuss the following comparisons: The retarded are to normal as normals are to gifted.

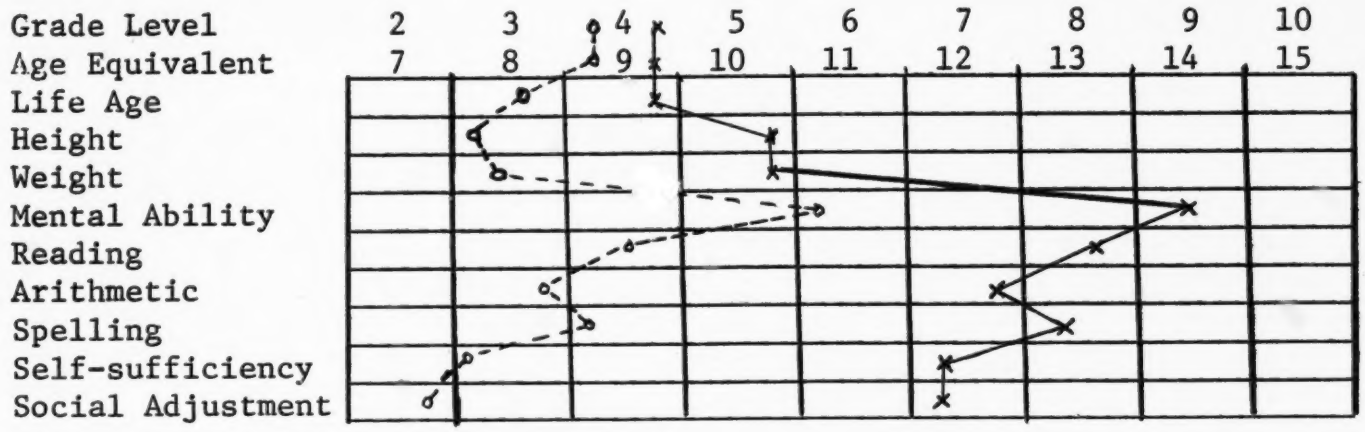
36. You will be shown a videotape of an exceptional child in school. Some information concerning teacher's observations and test results are available upon request for specific information. Based on our study of exceptional children, make a tentative diagnosis, identifying the major educational problems of this child and suggesting possible steps to take in dealing with him.

37. Suggest at least three specific and concrete examples of how to improve teacher training programs in the area of the gifted. Explain in each case why you feel this is an improvement on existing practice.

38. Indicate briefly the purpose, methodology, and results reported in Ringness' study of emotional adjustment of academically successful and non-successful boys. Discuss the weaknesses and shortcomings of this study and suggest what improvements in design and procedure could be made in testing the problems posed by his study.

39. We have studied the characteristics of exceptional children and provisions for their education. Now assume you have just been appointed as the first Director of Special Education in the typical American community of Anurba, population 30,000. Outline the requirements for special education classes in this community's schools.

40. Discuss the educationally relevant information in the following profiles:



Practice Questions Key:

21.	III	25.	II	29.	V	33.	VI	37.	V
22.	VI	26.	VI	30.	I	34.	V	38.	VII
23.	I	27.	II	31.	VII	35.	III	39.	IV
24.	II	28.	III	32.	I	36.	IV	40.	IV

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